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THE NORTH CAROLINA  
COLLEGE OF AGRICULTURE AND MECHANIC ARTS  
AGRICULTURAL EXPERIMENT STATION DEPARTMENT

GEO. T. WINSTON, A.M., LL.D., DIRECTOR.



## Another Warning in Regard to Compost Peddlers.

W. A. WITHERS.



WEST RALEIGH, N. C.

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# THE NORTH CAROLINA COLLEGE OF AGRICULTURE AND MECHANIC ARTS

## AGRICULTURAL EXPERIMENT STATION DEPARTMENT,

WEST RALEIGH, N. C.

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The Director's office is in the main building of the College. Telephone No. 38. The street cars pass within one hundred yards of the College building.

The Station is glad to receive any inquiries on agricultural subjects. *Address all communications to the Agricultural Experiment Station, and not to individuals.* They will be referred to the members of the Station staff most competent to answer them.

# Another Warning in Regard to Compost Peddlers.

W. A. WITHERS, A.M. CHEMIST.

In January, 1897, the Experiment Station published a bulletin (No. 137) regarding compost peddlers, in which the following language was used:

"The farmers of the State are urgently advised not to pay any money for fertilizing formulas, as the Station is ready and willing to suggest any mixture for any crop, using any materials at hand, or most convenient to be had. It has in the past distributed many hundreds of these formulas, and is distributing them every day. These formulas are sent entirely free, and are made up in proportions that are known to be correct, not only from a scientific but a practical standpoint. Of what earthly use is it to buy from a man, at a high price, a set of figures, which nine times out of ten, is incorrect, and even if correct, could be had by application to the Station without cost? \* \* \* After an experience of twenty years, the Station can confidently advise the people of the State to stop buying so-called formulas that are in almost all cases entirely worthless."

The purpose of this bulletin is to repeat the warning given three years ago and to emphasize it by pointing out the defects in two such formulas which have been offered for sale in the State.

One of these formulas reads as follows:

## “Home Fertilizer

RECEIPT PRICE \$5.00.

— O —

The greatest fertilizer known for the farmer.  
Results much better from using  
the Home Fertilizer than  
any other made.

COST \$3.00 PER TON.

Box to hold one ton four feet square.

### INGREDIENTS.

- No. 1. Stable Manure 1 inch thick.
- “ 2. Chemicals One Gallon on Layer.
- “ 3. Lime one-eighth of an inch thick.
- “ 4. New dirt one inch thick.
- “ 5. Ashes one half of an inch thick.
- “ 6. Salt 60 pounds to ton.

### Chemical Preparation for one Ton.

Potash, 8 lbs; Nitrate of Soda, 4 lbs; Cuperas, 4 lbs; Muriate of Ammonia, 12 lbs; Phosphate Acid, 5 lbs. Mix with 12 gallons warm water.

Agent.

”

The name of the author is not given, but at the bottom of the formula is written, "John Green, Agent, from Sullivan County, Tenn."

It will be noted that the quantities of the ingredients to be used are expressed in some instances in pounds, in others in gallons, and in still others are to be determined by the thicknesses of layers in a box four by four feet. Knowing the weight of a gallon of water, estimating the cubical contents of the layers of different thicknesses, calculating to the equivalent in bushels and knowing the weights per bushel of the ingredients, the quantities of which are expressed in layers, we find that to make one ton it will take about nine layers of each ingredient and the box 4x4 feet to hold it should be a little over two feet deep.

One ton of the "Home Fertilizer" would be made up approximately of the following ingredients:

No. 1.	558 lbs.	Stable manure.	Chemicals.
No. 2.	8 lbs.	Potash.	
	4 lbs.	Nitrate of soda.	
	4 lbs.	"Coperas."	
	12 lbs.	Muriate of ammonia.	
	5 lbs.	"Phosphate acid."	
	98 lbs.	Warm water.	
No. 3.	81 lbs.	Lime.	
No. 4.	927 lbs.	New dirt.	
No. 5.	243 lbs.	Ashes.	
No. 6.	60 lbs.	Salt.	
	2,000 lbs.	Total.	

Some of these ingredients call for special mention:

The substance acid phosphate, or superphosphate, is in common use for fertilizing purposes, and phosphoric acid is also known to the chemist, but there is no such substance as "phosphate acid," and consequently, it is impossible for the farmer to purchase it.

*Muriate of ammonia* is not used for fertilizing purposes and is not licensed for sale in the State for such purposes. The only portion of it which is of value to plants is nitrogen, and it can be obtained more cheaply in the form of sulphate of ammonia, nitrate of soda, or organic substances. The directions for making "Home Fertilizer" are to mix the chemicals with warm water. Under these circumstances the ammonia will be set free by the potash and be lost.

*Copperas* (which is spelled in the formula of "Home Fertilizer" "coperas"), has been used upon experimental plots and found to be of no value in promoting plant growth.

*Nitrate of Soda* is valuable to plants when enough is used. In the

"Home Fertilizer" only four pounds per ton of compost are used, and this quantity is too small to be of any value. The nitrogen in four pounds of nitrate of soda would be furnished by about three dead cats and three dead cats to an acre would not help the plants very much.

Commercial *potash* is a mixture of potassium carbonate, caustic potash and caustic soda. It is not used for fertilizing purposes and is not licensed for sale for such purposes. It is objectionable because, on account of its caustic properties, it would tend to set ammonia free, and because the fertilizing element which it furnishes can be obtained more cheaply from the potash salts which are found upon the market. The actual potash in four pounds of commercial potash could be obtained from one bushel of ashes.

*Lime* is of value on some soils, but when used it is best to apply it directly to the soil at the rate of one ton or more per acre. In the compost heap it sometimes aids and sometimes checks fermentation. Its value in the compost heap is questionable, and it is not recommended for such use by the leading authorities.

*Salt* does not furnish any element which is needed by the plant, and it is of no value in the compost heap. Many years ago it was used in the compost heap with lime, but it is no longer used in that way, as it is considered to be of no benefit.

Nearly one-half of a ton of "Home Fertilizer" is *new dirt*. The only object in using new dirt in a compost heap is to catch any ammonia which might otherwise be lost. For this purpose small quantities are sufficient. When large quantities of new dirt are used the fertilizing strength of the compost is weakened and a large amount of unnecessary labor in handling is involved.

The two remaining ingredients are *stable manure* and *ashes*. Surely there are very few farmers who do not know that these substances are valuable if properly handled. In "Home Fertilizer" the proportions given for mixing these two substances are such that very much less good is accomplished by them than is possible because these substances do not contain their fertilizing ingredients in the best proportions to meet the needs of the growing plant. One thousand pounds of stable manure contain about 2.5 pounds of phosphoric acid, 5 pounds nitrogen and 6 pounds of potash. The amount of phosphoric acid in stable manure in comparison with the nitrogen and potash is not sufficient to meet the needs of the plant; consequently acid phosphate should be added. One thousand pounds of ashes contain about 20 pounds of phosphoric acid, no nitrogen, and 60 pounds of potash. To ashes, therefore, should be added materials supplying phosphoric acid and nitrogen. When stable manure and ashes are used there is a deficiency of both phosphoric acid and nitrogen and, consequently, materials should be

added supplying these. Unless this is done there is either too much potash or an insufficiency of phosphoric acid and nitrogen, which will result in waste in one case or a poor crop in the other.

It is claimed by the originator that "*results (are) much better from using the Home Fertilizer than any other made.*" The value of a fertilizer depends upon the amount of phosphoric acid, nitrogen and potash present in forms available to plants. Upon this basis let us compare "Home Fertilizer with the ordinary commercial fertilizer. One ton of the average commercial fertilizer sold in North Carolina (see Bulletin No. 158, page 89) contains about 170 pounds of available phosphoric acid, 50 pounds of nitrogen, and 45 pounds of potash. One ton of "Home Fertilizer" contains about 7 pounds of phosphoric acid, 6 pounds of nitrogen and 22 pounds of potash. It would take, therefore, over two tons of "Home Fertilizer" to furnish the amount of potash in one ton of average commercial fertilizer, over eight tons to furnish the nitrogen and over twenty-four tons to furnish the phosphoric acid. The claim made for "Home Fertilizer" has, therefore, no foundation in fact, and is an exaggeration which cannot be justified even for advertising purposes.

We advise farmers not to purchase the formula for making "Home Fertilizer."

## **ANOTHER FORMULA TO BEWARE OF.**

The following is a reproduction, as to type, wording and spelling, of a process offered for sale in the State, and which the Experiment Station warns farmers against purchasing or using:

# **"\*The Process OF COMPOUNDING THE FARMERS' COMPOUND FERTILIZER.**

First dig in each stable a pit size of stall or stable three feet deep. After digging the pit take rich, loamy soil or swamp muck. After being good and dry place in the pit to the depth of six inches, then place a thin layer of tobacco stalks, rotten straw or cotton seed. Then apply liberally by hand over the entire surface of the pit, the following compound or mixture: Twenty-five lbs. of salt petre, one bushel of common salt and one quart of carbolic acid, one gallon on each layer of the rich soil. Then dilute the carbolic acid in ten times the amount of water and sprinkle each layer. Then fill in another layer of rich soil and straw, and apply another sprinkle of the compound, and continue as above stated six inches of loam and another sprinkle of compound until the pit is filled to the surface of the ground. Then floor the stall or stable by laying small poles on the compound and floor the stable. The stock should be kept in the stall six months. The drainage of the stock and stall adds a great deal to the compound. This is the single process of compounding the Farmers' Compound Fertilizer.

Then construct alongside of stables a pen or pens with water tight floor, slanting downward. Place a V trough by the side of pens to catch the contents of said pen and run off in a barrel. Fill the pens with barn yard, chip manure, tobacco stalks or any rubbish, leave the pens uncovered. Construct by trough, the water from eaves of barn or stables, into the pens. Care should be taken not to let too much water go in the pens. Thus you have a complete leaching system. When the barrels are filled with lye from the pens it should be poured in stall or stable and sink into the pit with the compound. This is the double process of manufacturing Farmers' Compound Fertilizer.

### **STOCK IN THE STALL IS A GOOD CONDUCTOR OF**

Amonia from the air. Established by which the amonia Phosphoric acid and Potash from the solid manure, is conducted into the pit under the stall or stables and is there joined by the same ingredients in a safer and more abundant form, from the liquid manure deposited by the stock; making a powerful and available plant food in a much more concentrated and available form than is found in high priced commercial fertilizers.

At the end of six months your pits are ready to throw out, the contents of which has by this time become as black as ink and strong as lye. If you now want to use this through a drill it will be necessary to dry by spreading thinly on barn lot or floor and run through a sieve, or what is better, if you

\*Above these words on the original is a wood-cut over the words "Col. I. J. Britain, Inventor, Winston, N. C.", which we deem unnecessary to produce.

have one, an old fanning mill. If you wish to use in the drill on any crop when a drill is not necessary the drying sieving may be dispensed with.

An ordinary stable, say 10x14 feet will furnish 200 bushels of the compound, sufficient to fertilize 20,000 hills of tobacco or twenty acres of wheat with the highest grade fertilizer known to science.

The public is warned not to infringe upon my invention unless they are authorized by myself or lawful agents, for my rights must be respected.

**COPY     IIGHT SECURED.**

**I. J. BRITAIN,**

**WINSTON, N. C."**

We object to this formula because some of the statements are questionable as to accuracy, the directions are not sufficiently explicit, the process itself involves waste of labor and loss of material. We also advise farmers not to purchase formulas for making composts, because better formulas can be obtained free of charge.

The objectionable points may be treated more especially under the following heads:

**QUESTIONABLE STATEMENTS.**

- (1) The statement in the "Process," etc., that "stock in the stall is a good conductor of amonia (ammonia) from the air" is not true.
- (2) The statements in the "Process," etc., that the mixture gives "a powerful and available plant food in a much more concentrated and available form than is found in high-priced fertilizers," and that the mixture is "the highest grade fertilizer known to science," are not true.
- (3) It is stated on the sheet, "copyright secured," but in answer to a letter of inquiry, the Librarian of Congress in Washington writes us that the indexes "do not show any entry of copyright of the process of compounding the Farmers' Compound Fertilizer by I. J. Britain."

**DIRECTIONS NOT SUFFICIENTLY EXPLICIT.**

- (4) The directions are to "place a thin layer of tobacco stalks, rotten straw or cotton seed," but we are not told how many inches or what fraction of an inch corresponds to "thin."
- (5) The method prescribed for the application of carbolic acid is not clear. In one place the directions are to mix with saltpetre and common salt, and in the very next sentence we are told to dissolve it in water and sprinkle it over the layer. Which method shall be followed?
- (6) We are warned that "care should be taken not to let too much water go in the pens," but we are not given any rule for telling what amount is "too much."

(7) No directions are given as to the length, breadth or depth of a pen to correspond with a stable 10 x 14 feet.

(8) What does the author mean when he says: "Established by which the ammonia phosphoric acid and potash," etc?

#### DIRECTIONS INVOLVING UNNECESSARY LABOR OR WASTE OF MATERIAL.

(9) The process involves the use of 25 pounds of saltpetre. This substance furnishes potash and nitrogen. Potash can be obtained more cheaply in the ordinary potash salts, and nitrogen can be obtained more cheaply in the form of nitrate of soda, sulphate of ammonia or some organic substance.

(10) The process involves the use of one bushel of common salt which is of no value to plant growth.

(11) The process involves the use of carbolic acid which is not beneficial to plant growth, but which on the contrary has been known to hinder the germination of seeds.

(12) The process involves the digging of a pit, the construction of a floor in the stable with poles, the building of a pen with a water-tight floor, the throwing up into the pens of barnyard manure, etc., and the pouring of manure water from barrels into the stables. A very large part of this is unnecessary and therefore wasteful of labor.

(13) The process does not provide for saving the manure after it is leached in the pens. This substance is of some value and the farmer can not afford to throw it away.

When the farmer counts up the cost of the labor involved, and of the material used and considers that the only thing possible to be accomplished is the saving of about four or five thousand pounds of stable manure (dropped in each stable during six months), worth in the stable only four or five dollars, and that without any precaution some of the material would be saved anyway, he will doubtless conclude that "the process of compounding the Farmer's Compound Fertilizer" will prove a loss to him instead of a profit.

#### SUMMARY.

The two formulas which have been discussed above are typical of those which are usually offered for sale. We most earnestly advise farmers not to purchase compost formulas from travelling agents because they are either worthless, wasteful of labor, or material, or they prescribe substances which are not known or which are more expensive than necessary, and because the State has provided already means for furnishing free of cost to farmers formulas for making composts, mixtures, etc. At the end of this Bulletin is a list of Bulletins which can be had free of charge, and which give directions in full in regard to composts, etc. We give also a list of standard books

which this Station can recommend as reliable and as based on actual experience in the field and stable. In addition to this the members of the staff of this Experiment Station are glad to communicate with the farmers of the State in regard to matters which may perplex them, and about which they desire information.

We especially ask that a report be made to us of any compost peddler who is endeavoring to sell his formulas or so-called farm rights throughout the State.



## PUBLICATIONS RELATING TO FERTILIZERS.

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### EXPERIMENT STATION BULLETINS.

- No. 137.—A warning in regard to compost peddlers.
- No. 139.—Homemade fertilizers and composts.
- No. 159.—Horticultural Experiments at Southern Pines.

These may be obtained free of charge upon application to the Director of the Agricultural Experiment Station Department of the N. C. College of Agriculture and Mechanic Arts, West Raleigh, N. C.

### FARMERS' BULLETINS.

- No. 21.—Barnyard Manure.
- No. 36.—Cotton Seed and Its Products.
- No. 44.—Commercial Fertilizers and Composts.
- No. 48.—Manuring of Cotton.
- No. 77.—Liming of Soils.
- No. 81.—Corn Culture in the South.
- No. 82.—Culture of Tobacco.
- No. 89.—Cowpeas.

These may be obtained free of charge upon application to the Secretary of Agriculture, Washington, D. C.

### STANDARD BOOKS.

The Fertility of Land, by Roberts, 421 pages, published by the MacMillan Co., New York, N. Y., price \$1.25.

Fertilizers, by Voorhees, 335 pages, published by the MacMillan Co., New York, N. Y.; price \$1.00.

The Chemistry of Soils and Fertilizers, by Snyder, 277 pages, published by the Chemical Publishing Co., Easton, Pa.; price \$1.50.

Agriculture in some of its Relations with Chemistry, by Storer, 3 volumes, 1901 pages, published by Charles Scribner's Sons, New York, N. Y.; price \$5.00.

These should be ordered directly from the publishers or through a local book dealer.